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Patent Claims

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10 1. A bone-analogous coating for metallic implant materials, comprising a collagen matrix mineralized with a calcium phosphate phase.
- 15 2. A coating according to Claim 1, wherein the collagen matrix is layered. $\Rightarrow (K(2))$
- 20 3. A coating according to Claim 1, wherein the calcium phosphate phase of the matrix contains amorphous calcium phosphate $(Ca_9(PO_4)_6 \cdot nH_2O)$, hydroxyapatite $(Ca_{10}(PO_4)_6(OH)_2)$, octacalcium phosphate $(Ca_8H_2(PO_4)_6 \cdot 5H_2O)$, brushite $(CaHPO_4 \cdot 2H_2O)$ or mixtures thereof.
- 25 4. A coating according to Claim 1, wherein the calcium phosphate phase is doped with fluoride, silver, magnesium or carbonate ions or combinations thereof.
- 30 5. A coating according to Claim 1, wherein the collagen is collagen of type I.
- 35 6. A coating according to Claim 1, wherein the collagen is a mixture of collagen of types I to III.
7. A coating according to Claims 1, wherein said coating further contains gelatin.

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cont.*
- 8^y A coating according to Claims 1, further containing growth factors, peptide sequences, hormones, antibiotics or mixtures thereof.
- 5 9. A coated metallic implant comprising a metallic implant having an outer layer, wherein the outer layer comprises a coating according to Claim 1.
- 10 10. A coated metallic implant according to Claim 9, wherein the metallic implant is made of titanium or titanium alloy.
- 15 11. A process for the electrochemical coating of metallic implant materials with a mineralised collagen matrix comprising:
- 20 a) coating a metallic implant material by immersion in a collagen solution at a pH of less than 8 and a temperature 4 - 40°C, and
- 25 b) coating said metallic implant material with a calcium phosphate phase (CPP) in an electrochemically assisted process by means of galvanostatic polarization in an electrolyte solution comprising calcium ions and phosphate ions,
- 30 wherein process steps a) and b) are performed simultaneously or sequentially.
- 35 12. A process according to Claim 11, wherein an additional process step b) is placed in front of process step a).
13. A process according to Claim 11, wherein the process steps a) and b) proceed alternately a number of times.

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- 5 14. A process according to Claim 11, wherein the process steps a) and b) are combined into one step, the metallic implant material to be coated being electrochemically polarized cathodically in a collagen solution comprising calcium ions and phosphate ions.
- 10 15. A process according to Claim 11, wherein a cathodic current flow of -0.2 to -50 mA/cm² flows for 25 to 40 minutes during the galvanostatic polarization in process step b).
- 15 16. A process according to Claims 11, wherein the mineralised collagen matrix is layered.
- 20 17. A process according to Claims 11, wherein the coating further comprises gelatin.
- 25 18. A process according to Claim 11, wherein a cathodic current flow of -0.5 to -30 mA/cm² flows for 30 to 40 minutes during the galvanostatic polarization in process step b).
- 30 19. A process according to Claim 11, wherein a cathodic current flow of -1 to -10 mA/cm² flows during the galvanostatic polarization in process step b).
- 35 20. A process according to claim 11, wherein the galvanostatic polarization in process step b) is performed at a temperature of 30-40 °C.
- 35 21. A coated metallic implant comprising a metallic implant having an outer layer, wherein the outer layer is 0.04-150 µm thick and comprises a coating according to Claim 1.

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